

Cradle Enhanced UI Development

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1 Overview

This summer I have been working in the EDI (Exploration, Development, and Integration) office. The primary goal of my office is to facilitate the integration, cooperation, and communication between programs, projects and departments throughout the agency. The majority of my efforts has been focused on Cradle, a requirements management and systems engineering tool. This tool is utilized by teams throughout NASA to plan and track the development of a variety of ongoing projects.

2 Main Project

The primary objective of my project was to create an enhanced user interface utilizing modern technologies for the Cradle MBSE system. The desired outcome of this project was to create an application that simplifies the creation and presentation of development plans for projects throughout NASA. Concrete goals include development of a new user interface for this system, integration of features from the prototype and legacy systems, and creation of additional features as specified by the user requirements.

3 Duties

My primary duties included the development of a new user interface and features for communicating with the existing Cradle application. I took part in user interface design and development of features corresponding to requirements determined through biweekly meetings with the existing expert Cradle team. Implementation of these features through rapid prototyping and migration of an existing code base to an AngularJS application using the Angular Material framework composed a great deal of my duties during my internship.

4 Accomplishments

Major accomplishments include a completed search functionality with formatted results, migration of many existing prototype features to the new system, and development of an entirely new user interface for accessing the Cradle system. The search functionality in particular was a major accomplishment since the functionality didn't exist beforehand. The new search feature is capable of communicating with the Cradle database using over 30 search parameters. In addition, the results of these queries are displayed in a variety of new formats and can be filtered, sorted, and displayed based on a variety of options for the user. Hierarchies of items can also be displayed from the results page, allowing for easy access to the contents of the returned query results.

The application has come far enough this summer that it is planned to replace the default web interface to Cradle in the production environment within the next few months. This is an accomplishment that I am extremely proud to have been a part of and an incredible result to this summer's work.

5 Skills Learned

I learned an enormous amount about developing with AngularJS and JavaScript this summer. My coding skills for these types of applications has definitely improved, and I feel much more confident in my ability to develop using AngularJS. In addition, the process of meeting biweekly to show the current application progress and discuss the next features to implement was an excellent lesson in requirements gathering. Furthermore, time estimation for implementation of features was a major component of my work this summer. Learning to estimate time required is an extremely valuable skill and I have had a great deal of practice with this kind of estimation throughout the summer.

6 Internship Impact

This summer was an incredible opportunity from an educational and professional standpoint. From a professional perspective, the impact of working on a development team and working to develop solutions to an evolving list of requirements was a fantastic experience. Additionally, the amount of knowledge I have gained through interactions and advice from my team, mentor, and colleagues is enormous. Experiencing the environment where much of the effort is underway for furthering human space exploration has been the experience of a lifetime. I am thrilled to have played a part in the work done at NASA and hope to pursue a career with this much meaning and fulfillment in the future.